TITLE OF THE INVENTION

FACSIMILE APPARATUS AND CONTROL METHOD

5   FIELD OF THE INVENTION

This invention relates to a facsimile apparatus
having an electronic-mail function and to a method of
controlling a facsimile apparatus having this function.
10

BACKGROUND OF THE INVENTION

When a number of users share a single terminal in a
communication apparatus having an electronic mail (E-
15   mail) function, it is necessary to display a mailbox and
E-mail and to manage the operating environment for every
user. Various methods of authenticating individual
users are known for the purpose of achieving this.
For example, a log-in ID and password for every
20   user are stored beforehand and held in the apparatus.
The log-in ID is an ID for specifying a user. When the
E-mail function is used, there are instances where the
ID is replaced by a mail account. In a well-known
method of personal authentication, an input screen is
25   displayed when the E-mail function is used, and the user
enters an assigned log-in ID and password to enable use
of the E-mail function.

However, if the communication apparatus is so adapted that personal authentication is always required when E-mail is used as in the manner described above, a troublesome input operation for the purpose of personal authentication must be made every time even in a case where a single user and not multiple users employs the communication apparatus and in the case of a user for whom the user-by-user configuration of environment is not required. If there is only a single account, moreover, it is annoying to be compelled to select the account in order to send or receive mail.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to make an account selection operation unnecessary in accordance with account registration circumstances, thereby improving E-mail operability.

According to the present invention, the foregoing object is attained by providing a facsimile apparatus having a facsimile function and an E-mail function, comprising: registration means capable of registering multiple items of account information; deciding means for deciding whether the multiple items of account information have been registered in the registration means when the use of the E-mail function is directed by a user; selection means for selecting one item of

account information of the plurality thereof if the
deciding means decides that the multiple items of
account information have been registered in the
registration means; setting means for setting up an
5   account based upon one item of account information if
only one item of account information has been registered
in the registration means, and based upon an item of
account information selected by the selection means if
multiple items of account information have been
10   registered in the registration means; and processing
means for executing processing related to E-mail using
the account set up by the setting means.

According to the present invention, the foregoing
object is attained by providing a facsimile apparatus
15   control method for controlling a facsimile apparatus
having a facsimile function and an E-mail function,
comprising: a registration step of registering at least
one account information in registration means capable of
registering multiple items of account information; a
20   deciding step of deciding whether the multiple items of
account information have been registered in the
registration means when the use of the E-mail function
is directed by a user; a selection step of selecting one
item of account information of the plurality thereof if
25   the deciding means decides that the multiple items of
account information have been registered in the
registration means; a setting step of setting up an

account based upon one item of account information if only one item of account information has been registered in the registration means, and based upon an item of account information selected at the selection step if

5   multiple items of account information have been registered in the registration means; and a processing step of executing processing related to E-mail using the account set up at the setting step.

Another object of the present invention is to so

10 arrange it that E-mail can be used without performing personal authentication under certain conditions, thereby improving E-mail operability.

Further, it is so arranged that in the registering of account information, a name is registered in

15 association with each item of account information, and it is so arranged that a desired item of account information can be selected by specifying the corresponding name. This makes it possible to designate desired account information more intuitively.

20 Furthermore, it is so arranged that a list of registered names is displayed so that a desired name may be selected from the list. This enhances operability.

Further, authentication information is registered in association with each item of account information,

25 and authentication based upon the authentication information is performed with regard to selected account information. This makes it possible to maintain

security even if there are multiple users. In addition,
if there is only a single account, the labor involved in
performing authentication is eliminated. The result is
improved operability. Further, if authentication
5   information possessed by account information is
exploited as authentication information, then it will no
longer be necessary for a user to memorize an
unnecessarily large quantity of authentication
information. This also enhances operability.

10   Other features and advantages of the present
invention will be apparent from the following
description taken in conjunction with the accompanying
drawings, in which like reference characters designate
the same or similar parts throughout the figures
15   thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated
20   in and constitute a part of the specification,
illustrate an embodiment of the invention and, together
with the description, serve to explain the principles of
the invention.

Fig. 1 is a system block diagram of a communication
25   apparatus according to an embodiment of the present
invention;

Fig. 2 is a diagram showing the data structure of a telephone directory memory according to the embodiment;

Fig. 3A is a flowchart illustrating address retrieval based upon voice recognition according to the embodiment;

Fig. 3B is a diagram illustrating an example of a display of search results based upon an address search in Fig. 3A;

Fig. 4A is a flowchart illustrating overall processing for an E-mail operation according to the embodiment;

Fig. 4B is a flowchart illustrating processing for setting an account according to the embodiment;

Fig. 4C is a diagram illustrating an example of the structure of data in an account table according to this embodiment;

Fig. 4D is a flowchart useful in describing processing for automatically acquiring unreceived mail according to this embodiment;

Fig. 4E is a diagram useful in describing unreceived-mail information according to this embodiment;

Fig. 5 is a flowchart illustrating processing for a receive-mail operation according to this embodiment;

Fig. 6A is a flowchart illustrating processing for a new-mail-message operation according to this embodiment;

Fig. 6B is a flowchart illustrating processing for a new-mail-message operation according to this embodiment;

Fig. 7 is a flowchart illustrating processing for selecting an E-mail address from a directory according to this embodiment;

Figs. 8A and 8B are flowcharts illustrating processing for entering text according to this embodiment;

Fig. 9 is a flowchart illustrating processing for entering a template according to this embodiment;

Fig. 10 is a flowchart illustrating processing for sending E-mail according to this embodiment;

Fig. 11 is a flowchart illustrating processing for a send-mail operation according to this embodiment;

Fig. 12 is a flowchart illustrating processing for receiving E-mail according to this embodiment;

Fig. 13 is a flowchart illustrating processing for quitting E-mail according to this embodiment;

Fig. 14 is a diagram illustrating an operation quit sequence according to this embodiment;

Fig. 15 is a flowchart illustrating processing for receiving E-mail automatically according to this embodiment;

Fig. 16 is a flowchart for describing song-data download processing according to this embodiment; and

Fig. 17 is a flowchart useful in describing processing for reproducing song data according to this embodiment.

5   DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of the present invention will now be described in detail with reference to the accompanying drawings.

10   <1. Facsimile machine structure>

Fig. 1 is a block diagram illustrating the structure of a facsimile machine 100. The facsimile machine 100 includes a first central controller (CPU) 101, a ROM 102 storing a program for controlling

15 communication and printing, and a RAM 103 used for storing various data such as data representing images, voice, E-mail and an alert melody, and as a general work area.

An SRAM 114 holds various registration data. The

20 SRAM 114 is backed up by a battery (not shown) so that content of the memory will be preserved when power is turned off.

A printer image processor 104 applies various image processing to various data such as image data and E-mail

25 to be printed, outputs the processed data to a color printer 105 and causes the printer to print the data. The printer image processor 104 executes processing for

converting various data, which is held by the facsimile
machine, to printer resolution, and transmits print data
that has undergone the resolution conversion to the
color printer 105.

5   The color printer 105 outputs a facsimile image, E-
mail messages and attached images and copied images
received from the printer image processor 104.

An operation panel 106 is constituted by a key
input unit used when a dialing operation and various
10   settings performed, and a display unit for displaying
various data. By way of example, a liquid crystal
display device may be used as the display unit.

A scanner interface 107 is constituted by a
connector for attaching a hand scanner 200 and a data
15   transceiver register. A cross-point switch 109 is for
changing over the connections of an analog signal path
by control exercised by the CPU 101. A modem 110
functions to receive facsimile signals and to modulate
images read by the scanner and various control signals
20   to analog signals. The apparatus further includes a
handset 111, a speaker 112, a microphone 113, an NCU
108, which is a communication line interface, and a
sound source 115 capable of multiplexing and outputting
frequency-modulated signals. The sound source 115
25   outputs a predetermined melody via the speaker 112 when
an incoming call arrives.

A door phone (interphone) 300 is connected

externally of the apparatus by a communication line 900.
A signal from the communication line 900 and a signal
from the door phone 300 are distributed within the
facsimile machine 100 by the internal NCU 108 and are
5   connected to a communication-line input/output of the
cross-point switch 109 and to door-phone input/output,
respectively. A cordless-phone slave unit 400 is for
outside-line calls and facsimile communication via the
communication line 900 and for conversations on an
10   inside line using the handset of the apparatus proper.

     <2. Telephone directory>

     Fig. 2 is a diagram showing the structure of a
telephone directory memory in the facsimile machine 100.
Numeral 401 denotes an example of the data structure of
15   destination data concerning one contact. The data
includes "CONTACT TELEPHONE NO", "CONTACT NAME", "VOICE
DIALING TAG" and "E-MAIL ADDRESS" as registered content.
In the destination data, numerical-value data indicating
the telephone number of the contact is stored under
20   "CONTACT TELEPHONE NO.", the ASCII code of the name of
the contact is stored under "CONTACT NAME", and a
pointer indicating voice recognition data (referred to
as "voice dialing data" below) used when dialing by
voice recognition is performed is stored under "VOICE
25   DIALING TAG". In this embodiment, the storage number of
voice dialing data that has been stored in a separate
memory is registered as the "VOICE DIALING TAG".

Further, the E-mail address of the contact is stored under "E-MAIL ADDRESS". The destination data is stored in the SRAM 114 of the system proper.

Numeral 402 denotes a conceptual representation in a case where telephone directory data is actually stored in the SRAM 114. On the assumption that 100 destinations can be registered in the telephone directory, 100 items of the above-mentioned address data 401 are capable of being stored. For example, "0471341234" has been registered as the contact telephone number and the ASCII code of a "Mr. Nakao" has been registered as the contact name in the destination data of REGISTRATION NO. 1. Further, "1" has been set as the voice dialing tag. Furthermore, an E-mail address has been registered as the "E-MAIL ADDRESS". In the destination data at REGISTRATION NO. 100 in Fig. 2, "NULL" has been registered as the voice dialing log. This indicates that voice recognition data regarding this item of destination data does not exist.

When a user wishes to register destination data in the telephone directory, the user performs a directory registration operation using the operation panel 106 of Fig. 1, whereby a directory registration operation begins.

In the operation for registering a contact telephone number, the user enters the telephone number of the contact by pressing keys on the operation panel

106. The entered content is saved in the portion of the
registration data 401 corresponding to the contact
telephone number. Next, the user enters the name of the
contact by pressing the keys on the operation panel 106.

5   This content is saved in the contact name portion of the
registration data 401. Finally, the user registers
voice data for dialing the presently registered contact
by voice recognition.

     According to this embodiment, use is made of a

10   specific-speaker recognition method in which voice
entered from a voice input unit is registered and voice
recognition is performed using this voice. Such a
technique is well known in the art and need not be
described here.

15   Voice dialing tags for managing multiple items of
voice data are assigned and registered. The number of a
voice dialing tag assigned to an item of voice data
corresponds to the voice dialing tag portion of the
registration data 401. Entry of an E-mail address in

20   the registration data 401 is performed through a method
similar to that used to enter the name of a contact.
The entry of an E-mail address is by alphanumeric
characters.

     <3. E-mail transmission processing>

25   Described next will be processing for a case where
the user, after having registered the above-mentioned
destination data in the telephone directory memory,

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sends mail by voice recognition to a contact whose E-mail address has been registered in the telephone directory memory.

In the facsimile machine according to this embodiment, there are two methods through which E-mail is transmitted using voice recognition.

The first method includes searching the telephone directory using voice recognition, displaying whether or not an E-mail address has been registered in the retrieved destination data of a contact, and allowing the user to decide whether to create and send E-mail to this contact or originate a telephone call to this contact. If the user has selected creation and transmission of E-mail in this method, then the mailer for E-mail is opened and the E-mail address that is associated with the contact retrieved as a result of voice recognition is set automatically as the destination of the transmission. If the user has selected to originate a telephone call, on the other hand, then call originating processing is executed to call the telephone number associated with the retrieved contact. The details of this processing will be described later with reference to Figs. 3A and 3B.

The second method is for when a new mail message is to be created and includes opening the mailer for E-mail and then retrieving the destination address of the new message from the telephone directory using voice

recognition, thereby to enter the destination address. In the second method, processing for creating mail is executed with regard to a contact who has an E-mail address. Accordingly, the arrangement is such that when a contact is retrieved from the telephone directory by voice recognition, priority is given to retrieval of contacts having E-mail addresses. Alternatively, the scope of a search based upon voice recognition may be made solely those contacts who have E-mail addresses. The reason for the latter is that limiting the scope of the search raises the speed of search processing.

Thus, according to this embodiment, when a contact is retrieved from the telephone directory by voice recognition, the processing method used to search the telephone directory by voice recognition can be changed depending upon whether the search is conducted when the apparatus is in the usual operating state (the first method) or when a destination is to be entered for a new mail message (the second method). (With the second method, contact destinations having E-mail addresses are retrieved preferentially.)

[3-1. Mail creation and transmission by the first method]

Fig. 3A is a flowchart for describing the procedure of mail transmission processing according to the first method. The processing described below is implemented by having the CPU 101 execute a control program that has

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been stored in the ROM 102.

Voice recognition processing is started at step S301. Voice recognition processing is started using an input from keys on the operation panel 106 as a trigger. Initialization of a soft variable and initialization of a voice recognition engine of cross-point switch 109 in Fig. 1 (initialization of a global variable and setting of the cross-point switch and A/D converter of the CPU, etc.) is carried out at step S302. Next, at step S303, a display prompting the user to perform a voice recognition operation is presented on an LCD (not shown and referred to as a "display unit" below) of the operation panel 106. At the same time, a guidance tone prompting the user to perform the voice recognition operation is issued from the speaker 112 in Fig. 1.

This is followed by step S304, at which the voice recognition engine is started up to begin recognition of the user's voice entered from the microphone 113. Since voice recognition processing is well known, the details thereof need not be described. An outline of this processing, however, is as follows: Entered voice is converted to digital data, the digital data is compared with already stored voice data for recognition purposes, and the degree of similarity between the two is found. If maximum degree of similarity is greater than a predetermined value, it is judged that voice recognition has been performed normally and the voice dialing tag

that corresponds to the recognition voice data having the highest degree of similarity is acquired.

It is determined at step S305 whether voice recognition was performed normally. If the decision rendered is "YES", control proceeds to step S306. If the decision rendered is "NO", on the other hand, then processing for voice recognition is exited from step S305 (step S315).

If voice recognition could be performed normally, then search results are displayed at step S306. In the displaying of search results, the telephone directory memory is searched from the voice dialing tag acquired in voice recognition performed at step S304 and a contact name that has been set in the retrieved destination data is displayed. If an E-mail address has been set in the retrieved destination data, then an E-mail symbol is displayed in addition to the contact name. Fig. 3B is a diagram illustrating an example of a display of search results obtained at step S306. Here a search-result display 3001 is presented on the display unit of the operation panel 106. The search-result display 3001 displays a list of contact names from the telephone directory as well as a cursor 302 alongside the contact name of destination data specified by voice recognition. Furthermore, an E-mail symbol 301 that indicates whether an E-mail address has been set is displayed along with the search results. Thus, by

observing the search-result display 3001, the user can ascertain whether an E-mail address has been registered in association with the name of the contact.

Next, at step S307, it is determined whether an E-mail key (not shown) provided on the operation panel 106 has been pressed. If the E-mail key has been pressed ("YES" at step S307), then control proceeds to an operation (step S309) for sending E-mail to the E-mail address that has been retrieved by voice recognition. If the E-mail key has not been pressed ("NO" at step S307), then control proceeds to step S308.

If is found at step S307 that the E-mail key has not been pressed and, moreover, it is determined at step S308 that only an E-mail address and not a telephone number has been registered in the destination data retrieved by voice recognition ("NO" at step S308), then control proceeds to step S310 automatically even though the user has not pressed the E-mail key. As a result, processing for creating and sending mail begins.

If is found at step S307 that the E-mail key has been pressed, then it is determined at step S309 whether the destination data retrieved by voice recognition includes an E-mail address. If it does not ("NO" at step S309), control proceeds to step S312. If the destination data does include an E-mail address ("YES" at step S309), then control proceeds to step S310. Here the E-mail address in the search results is set

automatically in a transmit-destination buffer of the E-mail mailer. The mailer is then opened at step S311. With the destination having been set, the mailer waits for the user to perform an operation for

5   creating/sending E-mail. The flow of voice recognition is then exited (step S315).

In a case where destination data retrieved at step S308 is not only an E-mail address ("NO" at step S308), or in a case where an E-mail address is not included in

10   the retrieved destination data even though the E-mail key has been pressed, control proceeds to step S312.

Processing for making a transition to origination of a telephone call following retrieval by voice recognition is executed at step S312. Specifically, if

15   it is found here that an off-hook key has been pressed, control proceeds to step S313, where the telephone number registered for the contact telephone number in the destination data of the search results is dialed to originate a call. The flow of voice recognition is then

20   exited.

If it is found at step S312 that the off-hook key has not been pressed ("NO" at step S312), then it is determined at step S314 whether an on-hook key has been pressed. If the on-hook key has not been pressed ("NO"

25   at step S314), then control returns to step S307 and processing from step S307 is repeated, as a result of which the apparatus waits for depression of the E-mail

key, off-hook key or on-hook key. If it is found that
the on-hook key has been pressed ("YES" at step S314),
then control proceeds to step S315 and the flow of voice
recognition is terminated.

5   In accordance with the procedure set forth above,
the mailer is launched and the mail address of a contact
is set merely by designating the contact by voice in the
creation and transmission of a new mail message. As a
result, when a new mail message is created and sent, the
10   user need not take the trouble to launch the mailer and
enter a destination address every time.

       [3-2. Mail creation and transmission by the
       second method]

       According to the second method, the mailer for E-
15   mail is opened in order to create a new mail message,
the destination of the mail is retrieved from the
telephone directory by voice recognition, and the
destination is set. This processing is executed in a
"NEW MAIL MESSAGE" operation, which is one mailing
20   operation, described later. The details of this
processing will be set forth later with reference
particularly to Figs. 8 and 9 in the description of E-
mail operation below.

       <4. E-mail operation>
25   E-mail processing in the facsimile machine
according to this embodiment will now be described. The
E-mail processing set forth below includes a manual E-

mail operation and processing for receiving E-mail automatically. The manual E-mail operation further includes an operation for receiving mail, an operation for sending mail and an operation for new mail messages.

5   First, reference will be had to the flowchart of Fig. 4A to describe the overall operation of the E-mail function. Control indicated by the multiple flowcharts described below is implemented by having the CPU 101 execute control programs stored in the ROM 102.

10   [Overview of manual E-mail operation]

Fig. 4A is a flowchart useful in describing the E-mail operation according to this embodiment.

The facsimile machine according to this embodiment is characterized in that, depending upon the environment in which it is used, as in the home, the machine is

15 employed by a number of individuals and is capable of sending and receiving E-mail on a person-by-person basis. Accordingly, the facsimile machine is so adapted as to afford a plurality of mail accounts and to be

20 capable of managing E-mail for each individual mail account.

If an E-mail key provided on the operation panel 106 is pressed when the facsimile machine of this embodiment is in the standby state, a screen for dealing

25 with E-mail is displayed so that various operations relating to E-mail can be carried out. When the E-mail key is pressed, therefore, with the facsimile machine in

the standby state, it is determined at step S401 whether
a plurality of mail accounts have been set up in the
facsimile machine. If only one account has been set up
("NO" at step S401), control proceeds to step S403.

5   If multiple mail accounts have been set up, on the
other hand ("YES" at step S401), control proceeds to
step S402, where a mail-account selection screen is
displayed on the LCD display unit provided on the
operation panel 106. The user selects the desired mail

10   account. An arrangement may be adopted in which each
mail account is given a name (e.g., the name of the
person using the account) and the desired name is chosen
to select the desired mail account. Further, it may be
so arranged that when the mail account is selected,

15   personal authentication is made using an ID or password,
thereby assuring that only the user of the particular
mail account can use the account.

       The processing indicated by steps S401, S402 above
is conceptual. Processing for setting up an account

20   through steps S401, S402 will be described in further
detail with reference to Figs. 4B and 4C.

       First, an account table 401 in which E-mail account
information has been configured is acquired at step S421
in Fig. 4B. Fig. 4C is a diagram showing an example of

25   the data structure of the account table 401. Name 402,
ID 403 and password 404 serving as authentication
information, and account information 405 have been

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registered in the account table 401. Authentication
information necessary when E-mail is actually acquired
from an E-mail server is stored in the account
information. The account table 401 is held in the SRAM
5   114.

It is determined at step S422 whether multiple
accounts have been registered in the account table 401.
If only one account has been registered ("NO" at step
S422), the registered account information is used to set
10   an account in order to execute an ensuing E-mail
operation (step S429). If a plurality of accounts have
been registered in the account table 401 ("YES" at step
S429), then control proceeds to step S423 in order that
a desired account may be selected from the multiple
15   accounts.

The names of the multiple accounts registered in
the account table 401 are displayed in the form of a
list at step S423. That is, information that has been
registered in the name column 402 of account table 401
20   is displayed. When the name of the desired account is
designated at step S424, a screen for entering an ID and
password is displayed at step S425 to prompt the user to
enter an ID and password. Then, at step S426,
authentication is carried out based upon the designated
25   name and the entered ID and password.

If the result of authentication processing at step
S426 is that the user has been authenticated ("YES" at

step S427), control proceeds to step S428, where the
account information that was designated at step S424 is
set for the purpose of being used in an ensuing E-mail
operation. If authentication fails ("NO" at step S427),
then a display to this effect (a display indicating an
account designation error) is presented at step S430 and
processing is exited.

In order to simplify account designation in a
situation where the apparatus is for use in the home,
for example, the authentication processing of steps S415
to S427 may be deleted. In such case an E-mail
operation based upon a desired account becomes possible
merely by designating a name. For the purpose of
simplifying the user's operation, the password input of
the user in the authentication between the facsimile
apparatus and a mail center is omitted in the present
embodiment. That is, E-mail can be received from mail
center without a pass word. However, it is needless to
say that the input of the password may be required at
the reception of E-mail. Further, authentication
information such as the ID 403 and password 404 may
utilize the authentication information in the account
information 405. If the authentication information in
the account information 405 is exploited also for an ID
and password, this will be convenient because the ID and
password entered at step S415 can be utilized as is in
the procedure through which the mail center

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authenticates the user.

With reference again to Fig. 4A, it is determined at step S403 whether mail not yet received remains in the mail center. Various methods of receiving E-mail are conceivable. For example, there is an arrangement in which when E-mail arrives at the mail server, a mail terminal receives the E-mail automatically substantially at the same time (this shall be referred to as an "automatic reception mode" below). In another arrangement, the mail terminal is notified only of the fact that E-mail has arrived. Then, at a time convenient on the side of the mail terminal, the mail is acquired from the mail server (this shall be referred to as an "incoming-mail notification mode" below). In order to determine whether unreceived mail is at the mail server, the fact that unreceived mail is at the mail server is stored internally beforehand when there is notification of incoming mail in the incoming-mail notification mode or when reception of mail fails owing to communication error or a full memory in the automatic reception mode. On the basis of information of the above-mentioned kind, the facsimile machine determines at step S403 whether the mail server has unreceived mail.

If it is determined that there is no unreceived mail, control proceeds from step S403 to step S406. On the other hand, if it is determined that the mail center

has unreceived mail ("YES" at step S403), control
proceeds to step S404, where it is determined whether
the mail is capable of being received. The
determination as to whether mail is receivable involves
5   determining whether any of various factors that would
account for mail not being receivable have occurred in
the apparatus. As example is filling of the available
memory to capacity, making it impossible to receive any
more mail. Accordingly, if it is determined that mail
10 is receivable ("YES" at step S404), then the mail center
is called and the mail is received from the mail center
at step S405. On the other hand, if it is determined
that mail is not receivable ("NO" at step S404), then
control proceeds to step S406.

15   The processing indicated at steps S403 to S405 will
be described in further detail with reference to Figs.
4D, 4E and Fig. 12.

        Fig. 4D is a flowchart useful in describing the
details of processing for automatically acquiring
20 unreceived mail. Unreceived-mail information is
acquired at step S441. Fig. 4E is a diagram
illustrating an example the data structure of
unreceived-mail information 420. The unreceived-mail
information is held in the SRAM 114. In Fig. 4E,
25 numeral 421 denotes information as to whether there is
notification of incoming mail. In the incoming-mail
mode, this information indicates whether the E-mail

center has given notification of the arrival of E-mail. Further, numeral 422 denotes information as to whether reception failure has occurred. In E-mail reception processing, this information indicates whether E-mail

5   for which reception failure has occurred exists. In this example, the fact that notification has been given of incoming E-mail or the fact that there is mail for which reception has failed is indicated by "O", and the fact that notification has not been given of incoming E-

10   mail or the fact that there is no mail for which reception has failed is indicated by "X". In the situation illustrated in Fig. 4E, notification has been given of incoming E-mail and there is no mail for which reception has failed. The information 421 as to whether

15   there is notification of incoming mail is effective in the incoming-mail notification mode. It is not necessary to refer to this information in the automatic incoming-mail mode. It goes without saying that if reception of E-mail fails in the automatic incoming-mail

20   mode, the information 422 as to whether reception failure has occurred is set to "O" to indicate that such mail exists.

     With reference again to Fig. 4D, it is determined at step S422 whether mail for which the incoming-mail

25   notification has been given or mail for which reception has failed exists. If neither exists ("NO" at step S442), this means that the mail center has no unreceived

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mail and, hence, the processing of Fig. 4D is exited.

On the other hand, if it is determined that incoming-mail notification has been given or that there is mail for which reception has failed ("YES" at step S442), then control proceeds to step S443. Here it is determined whether or not mail is receivable, as described above in connection with step S404. If mail is receivable on the side of the facsimile machine, then the E-mail center is called at step S444 and the mail is received at step S445 using the account information that was set up at step S428 or S429 in Fig. 4B. Mail reception processing will be described later with reference to Fig. 12.

If mail reception processing is executed at step S445, the information as to whether there is notification of incoming mail is set to "X" to indicate no incoming mail and the information as to whether reception failure has occurred is updated (step S446) in accordance with the circumstances of reception at step S445. That is, if reception of mail fails for even one item of mail in the reception processing of step S445, the information 422 as to whether reception failure has occurred is set to "O" to indicate the occurrence of failure. If all mail has been received normally, then the information 442 is set to "X" to indicate absence of failure.

Fig. 12 is a flowchart useful in describing a

procedure for receiving E-mail at step S405. This
procedure is in accordance with the specifications of
individual carriers that provide the E-mail service.
Each procedure (protocol) differs depending upon the
5   carrier. However, since the procedure has no direct
bearing upon the essence of the present invention, it
will be described only in outline.

When the procedure for receiving E-mail starts, a
pre-procedure for E-mail is executed (step S1201). At
10   this time the procedure uses a modulation scheme
designated by the carrier. Following the success of the
E-mail pre-procedure, a mail record for carrying out
management of the mail reception data is allocated from
the mail memory pool (step S1202).

15   Header information, which is individual information
pertaining to the mail itself, and the data in the main
body text of the mail are received from the E-mail
server in a predetermined format (step S1203). These
items of information are managed in a form linked to the
20   allocated mail record or are stored in the mail record.
It is determined at step S1204 whether the mail has an
attached image. If it does ("YES" at step S1204), then
control proceeds to an attached-image transmission phase
(step S1205).

25   The set state of a soft switch (to select whether
the attached image is to be received in color or not) of
the facsimile machine is discriminated at step S1205.

If the switch has been set to "RECEIVE IN COLOR", the type of printer cartridge (color cartridge or monochrome special-purpose cartridge) is discriminated at step S1206. If it is determined at step S1206 that the cartridge is the color cartridge, then control proceeds to step S1207. Here a declaration is made to the effect that the terminal that receives the image attached to the E-mail has the ability to support both color and monochrome printing.

On the other hand, if it is found at step S1206 that the type of cartridge is the monochrome special-purpose cartridge, then control proceeds to step S1208 even through it was determined at step S1205 that the soft switch of the facsimile machine is set to "RECEIVE IN COLOR". At step S1208 a declaration is made to the effect that the terminal that receives the image attached to the E-mail has the ability to support only monochrome printing. Further, if it was determined at step S1205 that the soft switch of the facsimile machine is not set to "RECEIVE IN COLOR", then control similarly proceeds to step S1208 and a declaration is made to the effect that the terminal that receives the image attached to the E-mail has the ability to support only monochrome printing.

The server side refers to the terminal capability declaration made at step S1208 or S1207. When the attached image is originally a color image, the server

executes a procedure in which the image is converted to a monochrome image by color/monochrome conversion means within the mail server in case of monochrome printing, after which the monochrome image is transmitted to the

5 terminal.

Reception of the attached image is performed at step S1209 and then a post-procedure is carried out at step S1210. Further, in accordance with success/failure state of the above procedure, the status of the mail

10 record area is altered. In this embodiment, the specifications are such that a "MAIL SENT" decision is rendered if the transmission of the attached image on the side of the mail server is completed without difficulty. However, detailed management may be

15 performed by splitting the decision between success or failure of transmission of the main body text and success or failure of transmission of the attached image.

If it is determined at step S1204 that there is no

20 attached image, then the post-procedure is implemented at step S1210 and the status of the mail record area is changed at step S1211.

It should be noted that the setting of the soft switch on the facsimile machine at step S1205 generally

25 is set in a case where the user of the terminal wishes to inhibit color printing intentionally. By changing the terminal capability declaration at step S1206

depending upon the type of cartridge, it is possible to perform printing using a monochrome cartridge in the event that a spare color cartridge is not available on the terminal side. This will allow the user to check the content of the attached image. This expedient eliminates the inconvenience of not being able to see the content of an originally color image that was received though an user can not observe it in color.

An additional effect in a case where the soft switch is set to inhibit printing in color is that loss of the original color image is prevented. In general, an E-mail service system is such that when communication between the server and a terminal, inclusive of communication of an attached image, is successful, the E-mail is deleted at the convenience of the server or in accordance with the specifications. Execution of deletion differs depending upon the type of carrier or server. What triggers the deletion event is success of the communication between the server and the terminal. On the other hand, if the original image is in color but the image is received upon being converted to a monochrome image, communication between the server and the terminal is rendered unsuccessful forcibly. As a consequence, the E-mail is not deleted and the original attached image is left intentionally on the side of the server. This makes it possible to prevent loss of the original color image.

It should be noted that if communication has been set to unsuccessful at step S1211, the information 422 as to whether reception failure has occurred is set to "O" to indicate failure.

5   With reference again to Fig. 4A, a list of mail that has been received is displayed in list form on the operation panel 106 at step S406. Control then proceeds to step S407, at which the operation that the user desires is executed. Thus, in the present embodiment as

10   described above, a list of received E-mail is displayed automatically in updated form when an E-mail operation is performed. It may be so arranged that this display of a list of received mail is carried out only if step S405 is executed, i.e., only if new received mail

15   exists, or it may be so arranged that step S406 is eliminated and the list is displayed only in the E-mail operation performed at step S407.

The specific mail operations that are possible in the facsimile machine of this embodiment are "RECEIVE

20   MAIL", "SEND MAIL" and "NEW MAIL MESSAGE". The details of these operations will be described later. Finally, if it is determined at step S408 that the operation has ended (i.e., that quitting of the operation has been directed), then the E-mail operation is terminated.

25   As mentioned above, mail acquisition processing is executed automatically if unreceived mail exists at the mail center when, with the facsimile machine in the

standby state, the E-mail key is pressed to make the
transition to the mode in which various E-mail-related
operations are carried out. On the other hand, if the
contact to which E-mail is to be sent is retrieved from
5   the telephone directory and then the E-mail key is
pressed to make a transition to the screen for creating
a new mail message, automatic acquisition processing for
the acquisition of unreceived mail is not executed.

Thus, the arrangement set forth above is such that
10   when received mail is displayed, it is possible for the
mail to be displayed in the state in which the
unreceived mail was acquired without the user being
aware. If multiple mail accounts have been set up, a
transition is made to the mail account selection screen.
15   If only one mail account has been set up, however, the
transition to the selection screen is not made. As a
result, the operating procedure has fewer steps.

In the flowchart of Fig. 4A, the arrangement is
such that unreceived mail is acquired when the E-mail
20   operation is started. However, it may be so arranged
that when a transition is made to the mode for various
E-mail operations (receive mail, send mail and new mail
message) at step S407, the acquisition processing of
steps S404, S405 (the details of which are shown in Fig.
25   4D) is executed only one time. Further, it may be so
arranged that the acquisition of unreceived mail is
implemented at prescribed time intervals.

The "RECEIVE MAIL" operation, "SEND MAIL" operation and "NEW MAIL MESSAGE" operation, as well as the terminate operation executed at step S408, will now be described.

5   [4-1. Receive mail operation]

Fig. 5 is a flowchart illustrating the details the operation for receiving mail executed at step S407 in Fig. 4.

In the facsimile machine according to this
10   embodiment, the processing shown in Fig. 5 is executed when the "RECEIVE MAIL" operation is selected by the operator as the desired E-mail operation. At step S501 in Fig. 5, a list of already received E-mail is displayed on the display unit LCD of the operation panel
15   106. The received mail that is desired is then selected from the list at step S502. It is then determined at step S503 whether a function other than perusal has been designated with respect to the E-mail that was selected at step S502. This embodiment is such that functions
20   other than perusal are placed in a submenu. If a function other than perusal has been designated, control proceeds to step S506 to make a transition to the submenu. If perusal of the mail is desired ("NO" at step S503) control proceeds to step S504 without a
25   transition being made to the submenu. The text of the received mail selected at step S502 is displayed on the display unit LCD of the 106 at step S504. If perusal of

mail is not quit at step S505, control returns to step
S501 to present the list display of the received mail.

If an operation other than perusal is designated at
step S503 and the transition is made to the submenu,
control proceeds to step S506. Processing branches at
step S506 in dependence upon the function designated for
the received mail. In the facsimile machine according
to this embodiment, "PRINT", "EDIT/REPLY", "FORWARD",
"DELETE" of E-mail are included as functions that can be
selected.

If "PRINT" has been selected at step S506, the
received mail that has been selected is printed out at
step S507. Control proceeds to step S505 when printing
ends. In a case where the operation to receive mail is
terminated as is, the terminate operation is carried out
and processing is exited (step S505). If the operation
to receive mail is not terminated, then control returns
to step S501 to display the list of received mail.

If "EDIT/REPLY" has been selected at step S506,
then an editor is started up (step S508) to edit or
reply to the received mail that was selected at step
S502. (Use is made of processing for creating a new
mail message, described later with reference to Fig. 6.)
Here the address of the sender of the received E-mail
that was selected is set automatically as "DESTINATION"
in the processing for creation of a new mail message,
the subject of the received mail that was selected is

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copied to "SUBJECT", and the text of the received mail
is copied to "TEXT".

Similarly, if "FORWARD" has been selected at step
S506, an editor for forwarding the received mail
5   selected at step S502 is started up and processing for
forwarding this received mail is executed (step S509).
(Use is made of processing for creating a new mail
message, described later with reference to Fig. 6.) In
this case, the content of the received mail is used for
10   the subject and text of the mail, and the party to which
the mail is forwarded (the destination) is set.

If "DELETE" has been selected at step S506, then
the received mail selected at step S502 is deleted from
memory. Control then returns to step S501 to display
15   the list of received mail.

[4.2 New mail message operation]

Figs. 6A and 6B are flowcharts useful in describing
processing for creating a new mail message through the
new mail message operation at step S407 in Fig. 4 as
20   well as processing for sending this mail. It should be
noted that mail creation processing for a case where
received mail is edited/replied to or forwarded in the
receive mail operation also is implemented by the
processing shown in Figs. 6A and 6B.

25   The processing for creating a new mail message is
initiated in response to designation of "NEW MAIL
MESSAGE" operation by the user. According to this

processing, an initial screen for creation of a new mail
message is displayed on the display unit of the
operation panel 106. The destination, subject and text
are displayed on this screen (step S601). If this

5 processing is executed in response to the new mail
message operation, then "DESTINATION", "SUBJECT" and
"TEXT" will all be blank. If the initial screen display
is from "EDIT/REPLY" (step S508) in the receive mail
operation performed the user, then the sender of the

10 received mail that is to be replied to is copied to
"DESTINATION", the subject of this received is copied to
"SUBJECT", and the text of the received mail is copied
to "TEXT". If the initial screen display is from
"FORWARD" (step S509), then the subject of the received

15 mail is copied to "SUBJECT" and the text of the received
mail is copied to "TEXT". "DESTINATION" is blank.

   Under these conditions, a cursor "→" being
displayed on the display unit is moved to the desired
item by pressing "↑" and "↓" keys provided on the

20 operation panel 106. Destination, subject, text, send
and save are available as items that can be selected.

   If a "SET" key on the operation panel 106 is
pressed when the arrow cursor is situated at
"DESTINATION", control proceeds to step S604 through the

25 steps S602, S603, whereby a transition is made to
destination input processing.

   The methods available for entry of destination are

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entry of characters using numeric keys and entry by
making a selection from a telephone directory to which
E-mail address information has been added in the manner
shown in Fig. 2 (step S604).

5   If entry by telephone directory has been selected
at step S604, entry by telephone directory is judged at
step S605 and control proceeds to step S606. Processing
for selecting E-mail from the telephone directory is
initiated and a search of the telephone directory is

10   conducted at step S606. The details of processing for
selecting E-mail addresses from the telephone directory
will be described later with reference to Fig. 7. A
plurality of E-mail addresses can be registered in a
single item of destination data in the telephone

15   directory. Multiple addresses can be designated by a
single destination input with regard to destination data
in which a plurality of E-mail addresses have been
registered.

       If entry of a destination address by dialing

20   buttons has been selected at step S604, it is determined
at step S605 that an entry will not be made from the
telephone directory. Control then proceeds to step
S607, at which a template table for destination input is
set. Character input processing is then executed at

25   step S608. The details of character input processing
are as shown in Figs. 8A and 8B, and the details thereof
will be described later.

The template table set at step S607 includes ".co.jp", ".ne.jp", ".com" and ".ac.jp", etc. The candidates are displayed by a "FUNCTION" key and can be selected using inputs from the "↑" and "↓" keys. If processing for entering characters at step S608 is completed, the content is finalized by the "SET" key at step S609.

If the destination is finalized by the "SET" key at step S609, control proceeds to step S611 to restore the display for creating a new mail message.

Next, if pressing of the "SET" key is detected (step S612) with the arrow cursor situated at "SUBJECT" (step S611), a transition is made to processing for entering the subject (step S613). In subject input processing, a template table for subject input is set (step S614) and a transition is made to the character input processing of Figs. 8A and 8B (step S615).

Items such as "TODAY'S SCHEDULE", "GREETINGS" and "MATTERS TO COMMUNICATE" have been registered in the template table for subject input set at step S614. The candidates are displayed by the "FUNCTION" key and the desired template can be selected using inputs from the "↑" and "↓" keys. When the character input processing at step S615 is completed, the content is finalized by the "SET" key (step S616). If the subject is finalized by the "SET" key at step S616, control returns to the display for creating a new mail message (step S617).

Next, if pressing of the "SET" key is detected (step S618) with the arrow cursor situated at "TEXT" (step S617), a transition is made to processing for entering text (step S619). In text input processing, a
5 template table for text input is set (step S620) and a transition is made to the character input processing of Figs. 8A and 8B (step S621).

The template table for text input set at step S620 contains items such as "HI!", "TELEPHONE ME" and "TODAY
10 IS A HOLIDAY". The candidates are displayed by the "FUNCTION" key and can be selected using inputs from the "↑" and "↓" keys. When the character input processing at step S621 is completed, the content is finalized by the "SET" key (step S622). If the text is finalized by
15 the "SET" key at step S622, control returns to the display for creating a new mail message (step S623).

If pressing of the "SET" key is detected (step S624) with the arrow cursor situated at "SEND" (step S623), the fact that destination information has been
20 registered is checked and transmission of E-mail starts (step S625). The details of processing for sending E-mail will be described later with reference to Fig. 10.

If pressing of the "SET" key is detected (step S627) with the arrow cursor situated at "SAVE" (step
25 S626), the fact that destination, subject and text have been registered is checked, the E-mail information is saved and this information is displayed in list form

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together with E-mail information saved in the past (step S628).

Fig. 7 is a flowchart illustrating processing for selecting E-mail from the telephone directory at step S606 in Fig. 6B.

Processing branches at step S701 depending upon whether a search of the telephone directory is conducted by voice recognition (voice dialing). If search processing based upon voice dialing is not executed, i.e., if a "TELEPHONE DIRECTORY" key on the operation panel 106 has been pressed, control proceeds to step S702. Here contact names, for example, in the destination data 401 are displayed and a transmission destination is selected from the telephone directory by operating a predetermined key (by performing a scrolling operation or designating operation). The E-mail address that has been registered in the destination data of the designated transmission destination is acquired.

On the other hand, if a "VOICE DIALING" key is pressed at step S701, control proceeds to step S703 to acquire an E-mail address from the telephone directory by voice dialing. If the name of a contact is entered by voice at step S703, the transmission destination deemed to be appropriate as a result of voice recognition is displayed at step S704. When a search is conducted by voice recognition, priority is given to retrieval of contacts having E-mail addresses. Adopting

this expedient makes it easier to select contacts having
E-mail addresses and raises recognition rate as well.
Further, if it is so arranged that contacts not having
E-mail addresses are not retrieved, the speed of
5   processing for a search-recognition search increases.

     Figs. 8A and 8B are flowcharts illustrating the
details of character input processing (step S608) in
destination input processing of Fig. 6, character input
processing (step S615) in subject input processing, or
10 character input processing (step S621) in text input
processing.

     This control has the function of a front-end
processor (referred to as "FEP" below), which functions
as part of an editor for performing character input.

15   Character input of the FEP starts at step S801.
This is followed by step S802, at which the user enters
characters from keys on the operation panel 106 and the
number of entered characters is counted if the
characters are entered validly. Next, at step S803, the
20 number of validly entered characters is checked after
the entry of characters starts. If characters validly
entered exceed a number of characters constituting an
input limit of the FEP, control returns from step S803
to step S802 and the characters that were entered in
25 excess of the limit are discarded. If the number of
entered characters is less than the input limit ("YES"
at step S803), then control proceeds to step S804.

Next, it is determined at step S804 whether the key
operation performed at step S802 is a template input
operation. If the decision rendered is "YES", control
proceeds from step S804 to step S903 in Fig. 9. The
5   details of operation related to the template input
operation and processing will be described later with
reference to Fig. 9. If an operation for entering a
template has not been performed ("NO" at step S804),
control proceeds from step S804 to step S805.

10   It is determined at step S805 whether a character
changeover key has been pressed. If the key has been
pressed, control proceeds to step S806. Here the input
character mode is changed over and control returns to
step S802. Changeover of the input characters signifies
15   mode changeover among an "ALPHANUMERIC MODE", "*HIRAGANA*
MODE", etc. If it is found at step S805 that the
character changeover key has not been has not been
pressed, control proceeds to step S807, where it is
determined whether the key input at step S802 was that
20   of a dialing key. If the decision rendered is "YES",
then control proceeds to step S808 so that a character
input operation may be carried out.

On the other hand, if the key input was not that of
a dialing key ("NO" at step S807), then control returns
25   to the beginning (step S802) of the flowchart. If the
key input was not that of a dialing key, the input may
have been from a "CLEAR" key or "MOVE CURSOR" key, by

way of example. In this embodiment, such key operation
need not be described.

At step S808, control branches to whichever
character input mode has been selected. The character
input mode is decided from a character table assigned to
dialing keys and the number of times the keys are
pressed. The input operation itself is a well-known
method in which, basically, characters are entered on a
telephone or the like having dialing keys.

It is determined at step S808 whether the mode is
the input character mode. In changeover of the input
character mode, a changeover is made among an
"ALPHANUMERIC" mode, a "NUMERIC" mode, a "*HIRAGANA*" mode
and a "*KATAKANA*" mode in response to a specific key
input from the operation panel 106, as illustrated at
steps S805, S806. At step S808, control branches to
processing using each of the character input tables in
accordance with the input character mode to which the
changeover has been made by the above-described
changeover operation.

Processing of each character input table will now
be described. If the mode selected at step S806 is the
"ALPHANUMERIC" mode, then processing for entering
alphanumeric characters is executed at steps S809 to
S811.

By way of example, a case where the dialing key
pressed at step S802 is the "1" key will be described.

This embodiment is such that until entry of "@" is finalized in the alphanumeric mode, priority is given to @ and the character input table indicated at step S810 is used. In the alphanumeric mode, therefore, first

5   "@", which is the leading character in the character table (@ priority -- step S801) that has been assigned to the dialing key "1", is selected as a character candidate. If the dialing key "1" is pressed again, then ".", which is the second character in the character

10   table, is selected as the character candidate. If the same dialing key continues to be pressed without the character input mode being changed, character candidates that have been assigned to the dialing key "1" are selected in order. When one circuit of character

15   candidates of one dialing key has been completed, the leading character of the character table is again selected as the character candidate. Finalization of a selected character happens when an "ENTER" key is pressed, when a character changeover key is pressed to

20   change over the input character mode, or when some other key is pressed.

Next, if another dialing key, say the dialing key "2", is pressed in the same mode, then "a" assigned to the dialing key "2" is selected as the character

25   candidate. When this is done, the character candidate that was selected by the dialing key "1" is finalized. In other words, if first the dialing key "1" is pressed

to make "@" the candidate and then the dialing key "2"
is pressed to select "a" as the candidate, then the
character string "@a" will be entered as the input
characters of the FEP.

5   Next, if the dialing key "1" is pressed again in
the same mode, one loop of the flowchart is traversed
and then, after processing branches to the alphanumeric
mode at step S808, it is judged at step S809 that entry
of "@" has been completed. Control therefore proceeds
10 to step S811, the character table assigned to the
dialing key "1" is made a dot priority table, ".", which
is the leading character of this table, is selected
initially as the character candidate, and "@a." are
entered as the input characters of the FEP.

15   Thus, once "@", which is the candidate of the
dialing key "1", has been entered and finalized as a
character, the character candidate of dialing key "1"
regarding subsequent input characters is selected based
upon the character table for which "." has a higher
20 priority than that of "@". Generally, in an E-mail
address, there are many occasions where "." is entered
after "@". In addition, "." is entered several times
whereas "@" need be entered only once. Accordingly,
operability is improved by establishing the former mode,
25 in which @ takes priority, until "@" is entered, and
then establishing the latter mode, in which "." takes
priority, after "@" is entered.

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Next, if the mode selected at step S808 is the
numeric mode, input processing in the numeric mode is
executed at step S812. If the dialing key entered at
step S802 is the "1" key, then, in the numeric mode,

5   "1", which is the character that has been assigned to
the dialing key "1", is selected as the character
candidate. If the same dialing key continues to be
pressed in a case where the character input mode is not
changed, numerals "1111" are entered in succession.

10   Next, if the mode selected at step S808 is the
hiragana mode, input processing in the *hiragana* mode is
executed at step S813. For example, if dialing key
pressed at step S802 is "1", then, in the *hiragana* mode,
first (Ç†), which is the leading character in the

15   character table that has been assigned to the dialing
key "1", is selected as a character candidate. If the
dialing key "1" is pressed again, then "Ç¢", which is
the second character in the character table, is selected
as the character candidate. If the same dialing key

20   continues to be pressed in a case where the character
input mode is not changed, character candidates that
have been assigned to the dialing key "1" are selected
in order. When one circuit of character candidates of
one dialing key has been completed, the leading

25   character of the character table is again selected as
the character candidate.

Next, if another dialing key, say the dialing key

"2", is pressed in the same mode, then "Ç©" assigned to
the dialing key "2" is selected as the character
candidate.

If the *katakana* mode has been selected as the input
5   character mode, then control branches from step S808 to
step S814, where *katakana* characters are selected and
entered in a manner similar to that of the *hiragana* mode
described at step S813.

Whenever one character is entered, it is determined
10 at step S815 whether the entry of characters is
finished. If the user has performed an operation
indicating end of character input ("YES" at step S815),
control proceeds from step S815 to step S816. Here the
character input operation by the FEP is terminated and
15 the entered character string is sent back to a module
such as the editor that originally called the FEP.

If the user has not performed an operation
indicating end of character input ("NO" at step S815),
then control returns to step S802. Control proceeds to
20 character input processing of the FEP again. Thus, it
is possible to carry out character input by an FEP.

Fig. 9 is a flowchart of template input processing
executed in a case where it was determined at step S804
that the key operation was a template input operation.
25 First, template input processing is started at step
S901, then the input processing mode is discriminated at
step S902. Input processing modes are a destination

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(address) mode, a subject mode and a text mode, as
described in connection with Fig. 6. This decision is
for determining, by a variable that can be referenced
externally, what the present input mode of the apparatus

5   is (i.e, which of steps S608, S615, S621 is currently
being executed).

       In the address mode, it becomes possible to enter
alphanumeric characters used in an E-mail address.
Further, in the subject mode and text mode, it becomes

10   possible to enter alphanumeric characters, *hiragana*
characters, *katakana* characters and Chinese characters.

       If it is determined at step S902 that the input
processing mode for entering a template is the address
mode, then a transition is made to address template

15   input processing at step S903. Here all or part of an
address can be selected from a list of the template
table. The table list is displayed on the display unit
LCD of the operation panel 106 in Fig. 1 and any
template can be selected by key operation. It should be

20   noted that the template table is not limited to one
fixed by the apparatus; a template table can be
registered later at the will of the user.

       After selection of a template is made by the key
operation, the template selected at step S906 is copied

25   to a buffer of the calling source. Processing is then
exited at step S907.

       If it is determined at step S902 that the input

processing mode for entering a template is the subject
mode, then a transition is made to subject template
input processing at step S904. Here the desired
template is selected from the list of the subject

5   template table in a manner similar to that of step S903
and this is stored in the buffer of the source that
called this processing.

If it is determined at step S902 that the input
processing mode for entering a template is the subject

10 mode, then a transition is made to subject template
input processing at step S905. Here the desired
template is selected from the list of the text template
table in a manner similar to that of step S903 and this
is stored in the buffer of the source that called this

15 processing. Thus, processing for template input called
from the FEP is executed.

Transmission processing executed at step S625 will
be described next. Fig. 10 is a flowchart for
describing E-mail transmission processing executed at

20 step S625.

In order to connect to an E-mail server at step
S1001, a line is acquired and the E-mail server is
called. This procedure is in accordance with the
specifications of individual carriers that provide the

25 E-mail service. Each procedure (protocol) differs
depending upon the carrier. However, since the
procedure has no direct bearing upon the essence of the

present invention, it will be described only in conceptually.

　　　If a connection is made to the mail center at step S1001, a pre-procedure (authentication, etc.) for E-mail is executed (step S1002).　This procedure employs a modulation scheme designated by the carrier.

　　　After the success of the E-mail pre-procedure, header information specific to the mail per se and text data are transmitted to the E-mail server center in a predetermined format (step S1003).　It is then determined at step S1004 whether there is an attached image.　If the decision rendered is "YES", then control proceeds to a phase for transmitting the attached image (step S1005).　When transmission of the attached image ends, a post-procedure is executed at step S1006 and the telephone line connected to the E-mail server is disconnected at step S1007.　The status of the mail record area is changed in accordance with the success/failure circumstances of the procedure (step S1008).

　　　By virtue of the mail record data, mail that could not be transmitted can be discriminated by the terminal when perusal of outgoing mail is executed.　In this embodiment, the specifications are such that a "MAIL SENT" decision is rendered if the transmission of the attached image on the side of the mail server is completed without difficulty.　However, detailed

management may be performed by splitting the decision
between success or failure of transmission of the main
body text and success or failure of transmission of the
attached image.

5   [4.3   Send mail operation]

         If the "SEND MAIL" operation is specified, a send-
mail list display is presented to display the number of
mail items saved as outgoing mail as well as the
subjects of the outgoing mail. The user selects the

10   outgoing mail from the displayed list and can "BROWSE",
"PRINT", "EDIT/SEND" and "DELETE" outgoing mail.

         Fig. 11 is a flowchart for describing the content
of the send mail operation according to this embodiment.
A list of outgoing mail saved in memory is displayed at

15   step S1101. This is a display of a list of outgoing
mail that was saved in memory at step S628 in the above-
described processing for creating a new mail message.
It is also permissible to present the display in such a
manner that success or failure of transmission can be

20   distinguished. Next, at step S1102, desired outgoing
mail is selected from the list. It is determined at
step S1103 whether the outgoing mail selected at step
S1102 has been designated for transmission processing.

         If transmission processing has been designated

25   ("YES" at step S1103), control proceeds to step S1104,
where the outgoing mail selected at step S1102 is
transmitted in accordance with the transmission

procedure described above in connection with Fig. 10.
Control then returns to step S1101.

If processing other than transmission processing
has been designated ("NO" at step S1103), control
5   proceeds to step S1105. Here processing branches in
accordance with the processing designated with regard to
the outgoing mail. In the facsimile machine according
to this embodiment, "BROWSE", "PRINT", "EDIT/SEND" and
"DELETE" are included as selectable functions.

10   If "BROWSE" has been designated at step S1105,
control proceeds to step S1106, where the outgoing mail
selected at step S1102 is displayed on the display unit
of the operation panel 106. If end of browsing is
designated, control returns to step S1101. If "PRINT"
15   is has been designated at step S1105, control proceeds
to step S1107, at which the selected outgoing mail is
printed out. When printing ends, control returns to
step S1101.

If "EDIT/SEND" has been designated at step S1105,
20   an editor is started up at step S1108 to edit and/or
send the selected outgoing mail. In this case, the
processing for creating a new mail message described in
Fig. 6 is executed and the "DESTINATION", "SUBJECT" and
"TEXT" that have been set in the selected outgoing mail
25   are copied.

If "DELETE" is selected at step S1105, control
proceeds to step S1109, where the outgoing mail selected

at step S1102 is deleted from memory. Control the
returns to step S1101, where the list of outgoing mail
is displayed.

[4-4. Operation quit processing]

Fig. 13 is a flowchart illustrating the details of
the quit processing step (step S408) in the flow of
overall operation of E-mail shown in Fig. 4.

It is determined at step S1301 whether editing of
E-mail is in progress. If E-mail is not being edited
("NO" at step S1301), then other quit processing is
executed at step S1307. This is outside the scope of
the present invention and need not be described.

If it is found that editing of E-mail is in
progress ("YES" at step S1301), then it is determined at
step S1302 whether the mail record of this E-mail has
already been acquired. If the answer is "NO", then
processing ends. If the record has been acquired ("YES"
at step S1302), then the "ADDRESS", "SUBJECT" and
"TEXT", etc., which constitute the entered content
indicated in Fig. 6, are saved in the mail record or
saved in a form linked to the record (step S1303).
Furthermore, the fact that mail has not been sent is
saved in the mail record as status (step S1304). It
should be noted that since status is saved as "SENT"
when send processing ends, the assignment "UNSENT" may
be made if there is no change in status.

Next, since creation of mail will suddenly be

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suspended, a message "MAIL NOW BEING CREATED WILL BE
SAVED AS UNSENT MAIL" is displayed on the display panel
(step S1305) to prevent the user from performing an
erroneous operation or executing suspend processing
because of undue anxiety. Finally, processing is exited
after a message to the effect that the operating task
will end is sent to other line tasks, etc. (step S1306).
This exit message is indicated at T-m3 (described later)
in Fig. 14.

Fig. 14 is a diagram illustrating the operating
status of operation-related tasks and line-related tasks
when mail creation is suspended during the creation of
E-mail and when there is an incoming E-mail response.

In Fig. 14, T-A represents the status of operation-
related tasks, T-B represents the status of tasks for
monitoring line events and for performing line control,
and T-C represents the signals on a line and the state
of closure. Time elapses from top down in Fig. 14.

Under ordinary standby conditions, the line-related
task monitors a line in permanent fashion (T-B1). If
the user creates E-mail by input from the operation
panel (T-A1), the operation-related task executes
processing with regard to the operation for creating
mail. Meanwhile, the line-related task continues to
monitor the line (T-B1). If a CI signal arrives through
the line from an exchange, CI sensing means in the NCU
108 of the facsimile machine shown in Fig. 1 senses the

CI signal. Whether the CI signal is a prescribed
frequency, whether it has a prescribed ON time and a
prescribed OFF are sensed in the line task (T-B2; CI
inspection phase). If CI signals are detected greater
5   than a prescribed number of times within a stipulated
range, the facsimile machine prepares to shift to a
prescribed mode and transmits a quit-request message
from the line-related task to the operation-related task
(T-m2). The prescribed mode signifies an answering-
10   service telephone mode or an FT mode, etc., and the
prescribed number of times is set in advance on a mode-
by-mode basis.

The line-related task performs transmission of the
quit-request message (T-m2) to the operation-related
15   task and performs tracing concurrently to determine
whether the CI signal turns off. If the operation-
related task receives the quit request, on the other
hand, this task executes the "OPERATION QUIT PROCESSING"
(Fig. 13).

20   Following execution of the processing shown in Fig.
13, the operation-related task transmits quit
notification to the line-related task (T-m3). Upon
detecting the end of the operation-related task, the
line-related task performs "LINE CLOSURE" (T-B-4) and
25   checks the required signals after closure (FAX signal, a
start-up signal from the E-mail center, and a DTMF
signal) (T-B5). On the basis of results obtained by

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checking the start-up signal at T-B5, processing
branches to the required mode (response to answering
service, receipt of FAX, communication with E-mail
center, etc.).

5 <5. Automatic E-mail reception operation>

The receive mail operation described above starts
in response to manual selection of "RECEIVE MAIL
OPERATION" by the user. However, by setting an
automatic mail reception mode, the facsimile machine
10 according to this embodiment can respond automatically
to a call from the E-mail center and can receive E-mail
automatically. Fig. 15 is a flowchart illustrating the
details of automatic reception of E-mail according to
this embodiment.

15 When E-mail addressed to this facsimile machine
arrives at the E-mail server, the server calls the
facsimile machine and the facsimile machine responds at
step S1501 and makes a connection to the E-mail server.
Next, at step S1502, E-mail is received from the E-mail
20 server by the processing described in Fig. 12 and the
line is disconnected at step S1503.

When automatic reception of E-mail ends, control
proceeds to step S1504, where a transition is made to
processing for automatic printing of E-mail. It is
25 determined at step S1504 whether "E-MAIL AUTOMATIC
PRINT" has been turned on by a setting made by the user.
If "E-MAIL AUTOMATIC PRINT" is found to be "ON" at step

S1504, control proceeds to step S1505, where processing
for printing E-mail automatically is executed.
Specifically, if the user setting "E-MAIL AUTOMATIC
PRINT" is set to "ON" by the user, mail that has been
5   received automatically can be printed automatically
without intervention by the user. This makes it
possible to eliminate the inconvenience of waiting for
printing to take place.

It is determined at step S1505 there is E-mail that
10 has not yet been printed. If there is no unprinted E-
mail, control proceeds to step S1509. If there is
unprinted E-mail, on the other hand, then control
proceeds to step S1506, where it is determined whether a
"HEADER DETAILS PRINT" setting in the user settings is
15 "ON". If the setting is "OFF, control proceeds to step
S1507; if it is "ON", control proceeds to step S1508.
If the header details print setting is found to be OFF
at step S1506, then the unprinted E-mail is printed
automatically in a simplified-header print mode (step
20 S1507). The simplified-header print mode is a mode in
which the text of received E-mail and only the required
items from the header of this E-mail, e.g., From, To,
Subject, Date, etc., are extracted and printed. By
concealing complicated information contained in the
25 header, a printed format that is easier for the user to
view can be obtained. If it is found at step S1506 that
the "HEADER DETAILS PRINT" setting is ON, then the text

of the received E-mail and the entirety of the header
are printed (step S1508). More specifically, the mode
for detailed printing of the header signifies a mode for
printing all of the header information. By having the
user change over the "HEADER DETAILS PRINT" setting, a
print format in line with user requirements can be
provided.

Next, at step S1509, all E-mail stored in the
facsimile machine that is the object of the above-
described print processing has its state changed to the
printed state so that it will not be printed again the
next time automatic reception of E-mail is performed.

Thus, by virtue of the E-mail reception processing
described in connection with Fig. 15, printing can be
performed in a desired header printing mode and it is
possible to eliminate time during which the user waits
for printing to be performed.

<6. Incoming-call alert melody>

In the facsimile machine according to this
embodiment, a melody can be used as a ringing tone at
the time of an incoming telephone call or at the time of
an incoming fax. This incoming-call alert melody may
use an alert melody already build in, may employ song
data, which has been entered by the facsimile machine,
as the alert melody, or can use song data, which has
been downloaded from the server via a communication
line, as the alert melody. It is obvious that the

function related to such melody data is not limited to a facsimile machine and is applicable also to a communication terminal such as a mobile telephone.

Fig. 16 illustrates processing for downloading song data. The present facsimile machine is connected to a song-data download server and can download song data from the server. Processing for downloading this song data will be described with reference to Fig. 16.

When an operation for designating the start of song-data download by the user is performed via the operation panel 106 at step S1601, the cross-point switch 109 is connected to the NCU 108 at step S1602 and the song-data download server is called automatically via the NCU 108.

A song menu is received from the connected song-data download server and the received song menu is displayed on the display unit of the operation panel 106. A song selection is made by the user at the operation panel 106 at step S1604, and the song data selected by the user is downloaded from the server at step S1605.

Song data is reproduced by processing, which will be described later with reference to Fig. 17, in order that the user may decide whether or not to register the song data. The user can test-listen to the downloaded song immediately. The user is allowed to select whether the reproduced song data should be registered in the

facsimile machine. If a designation is made to register
the data, then control proceeds from step S1607 to step
S1608, where the song data is registered in the SRAM 114
of the facsimile machine. Control then proceeds to step
5   S1609, where the user decides whether or not to instruct
the termination of download processing. On the other
hand, if a designation is made not to register the song
reproduced at step S1606, control proceeds directly from
step S1607 to step S1609.

10   If the user decides not to instruct the end of
download processing at step S1609, control returns to
step S1603 and the above-described processing is
repeated. If the end of download processing is
instructed, on the other hand, control proceeds to step
15   S1610, where the connection to the song-data download
server is ended, the line is disconnected and this
processing is exited.

Fig. 17 is a flowchart useful in describing
processing (step S1606) for reproducing song data that
20   has been downloaded. The MAX musical scale (high-
frequency side) and MIN musical scale (low-frequency
side) of the downloaded song data are detected at step
A1701. It is determined at step S1702 whether the
detected MAX musical scale is capable of being
25   reproduced by the sound source 115. Control proceeds to
step S1703 if reproduction is possible and to step S1704
if reproduction is not possible.

If a musical scale that cannot be reproduced is
included on the high-frequency side, then the difference
between the MAX musical scale of the song data and the
reproducible MAX musical scale is calculated as a minus
offset at step S1704. The overall musical scale of the
song data is shifted toward the MIN side (low-frequency
side) by an amount equivalent to the calculated minus
offset at step S1705 and control then proceeds to step
S1711.

On the other hand, if a musical scale that cannot
be reproduced is not included on the high-frequency
side, then control proceeds to step S1703. Here it is
determined whether the MIN musical scale in the
downloaded song data is capable of being reproduced. If
reproduction is possible, then all of the song data can
be reproduced. Control therefore proceeds to step
S1711, where the music data is reproduced.

However, if a musical scale that cannot be
reproduced is included on the low-frequency side, then
control proceeds to step S1706, where the difference
between the reproducible MAX musical scale and the MAX
musical scale of the song data is calculated as a plus
offset 1. Next, at step S1707, the difference between
the reproducible MIN musical scale and the MIN musical
scale of the song data is calculated as a plus offset 2.
The two plus offsets are compared at step S1708 and
control proceeds to step S1709 if the plus offset 1 is

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smaller; otherwise, control proceeds to step S1710. At
step S1709, the plus offset 1, which is an amount of
shift that is possible within a range for which there
will be no deviation on the high-frequency side, is
5   smaller than the plus offset 2, which is a portion that
deviates on the low-frequency side. Accordingly, the
overall musical scale is shifted toward the MAX side
(high-frequency side) by the amount of the plus offset 1
so that there will be no deviation on the high-frequency
10   side. Control then proceeds to step S1711. At step
S1710, the plus offset 1, which is an amount of shift
that is possible within a range for which there will be
no deviation on the high-frequency side, is equal to or
greater than the plus offset 2, which is a portion that
15   deviates on the low-frequency side. Accordingly, the
overall musical scale is shifted toward the MAX side
(high-frequency side) by the amount of the deviation on
the low-frequency side, i.e., by the amount of the plus
offset 2. Control then proceeds to step S1711.

20   The downloaded song data is reproduced by the sound
source 115 as is at step S1711 if this step was reached
directly from step S1703. However, if step S1711 was
reached from step S1709, step S1710 or step S1705, then
song data that has been obtained by shifting the overall
25   musical scale of the song within a range in which the
song data on the MAX side (high-frequency side) can be
reproduced is reproduced by the sound source 115 at step

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S1711. The sound reproduced is output from the speaker
112. It is possible that there will be an
unreproducible musical scale on the MIN side (low-
frequency side). In such case, however, reproduction of
5   the song data continues while the low-frequency region
is silenced.

      With regard to the song data registered at step
S1608 in Fig. 16, a downloaded song may be registered as
is, or song data in which the musical scale has been
10 adjusted by the processing of steps S1702 to S1710 may
be registered. In other words, it may be so arranged
that the original song data that has been downloaded is
registered as is at step S1608. Then, when the
registered song is played back at the time of an
15 incoming telephone call or incoming fax, etc., the song-
data reproduction processing shown in Fig. 17 is
executed. Alternatively, it may be so arranged that in
the song-data reproduction processing at step S1606,
song data whose musical scale has been shifted by the
20 processing of Fig. 17 is registered at step S1608.
Then, when the song is played back at the time of an
incoming telephone call or incoming fax, etc., the song
data that has been shifted and registered is reproduced
as is.

25   Considered next will be a case where the master and
slave units of the facsimile machine have sound sources
whose reproducible ranges differ.

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A case where the sound source on the master side can reproduce only a range narrower than that reproducible by the sound source on the slave side will be described. In a case where an operation for

5 downloading song data is performed on the master side and the downloaded song data is used by the slave unit 400, there may be no sound source that can support the song data when the song is listened to on the master side. In such case, playback can be achieved by

10 shifting the scale of the song data at step S1606 in the manner described above. Then, when the song data is registered at step S1608, the original song data is registered.

It may be so arranged that when song data that has

15 been registered is to be registered in the slave, the song data is transmitted to the slave at step S1608. It may be so arranged that when the slave side requests transmission of song data that has been registered in the master, the song data is transmitted to the slave.

20 By adopting such arrangements, even song data that is reproducible on the slave side but is not completely reproducible on the master side can be listened to and checked on the impressive high-pitch side at the master.

In accordance with this embodiment, as described

25 above, an entire song can be reproduced in a case where the song data has a dynamic range that falls within the dynamic range of the sound source 115 even if the scale

is not reproducible by the sound source 115. Since the entire scale is shifted in this case, playback is accompanied by a shift in tone. However, the overall song can be ascertained. Further, even if the dynamic

5   range of the song data does not fall within the dynamic range of the sound source, the unreproducible scale is limited solely to one side, namely the MIN side (low-frequency side), and is always reproduced on the impressive MAX side (high-frequency side), thereby

10   making it possible to enhance the effectiveness of song-data verification.

       (Other Embodiments)

       The present invention can be applied to a system constituted by a plurality of devices (e.g., a host

15   computer, interface, reader, printer, etc.) or to an apparatus comprising a single device (e.g., a copier).

       Furthermore, it goes without saying that the object of the invention is attained also by supplying a storage medium storing the program codes of the software for

20   performing the functions of the foregoing embodiment to a system or an apparatus, reading the program codes with a computer (e.g., a CPU or MPU) of the system or apparatus from the storage medium, and then executing the program codes.

25   In this case, the program codes read from the storage medium implement the functions of the embodiment and the storage medium storing the program codes

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constitutes the invention.

Examples of storage media that can be used for supplying the program code are a floppy disk, hard disk, optical disk, magneto-optical disk, CD-ROM, CD-R,

5   magnetic tape, non-volatile type memory card or ROM, etc.

Furthermore, besides the case where the aforesaid functions according to the embodiment are implemented by executing the program codes read by a computer, it goes

10   without saying that the present invention covers a case where an operating system or the like running on the computer performs a part of or the entire process in accordance with the designation of program codes and implements the functions according to the embodiment.

15   It goes without saying that the present invention further covers a case where, after the program codes read from the storage medium are written in a function expansion board inserted into the computer or in a memory provided in a function expansion unit connected

20   to the computer, a CPU or the like contained in the function expansion board or function expansion unit performs a part of or the entire process in accordance with the designation of program codes and implements the function of the above embodiment.

25   Thus, in accordance with the present invention as described above, an account selection operation is dispensed with in accordance with account registration

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status, thereby improving E-mail operability. In
particular, an E-mail operation can be performed without
carrying out personal authentication under certain
conditions (e.g., on the condition that there is only

5   one account). This also improves E-mail operability.

As many apparently widely different embodiments of
the present invention can be made without departing from
the spirit and scope thereof, it is to be understood
that the invention is not limited to the specific

10   embodiments thereof except as defined in the appended
claims.